DUGWAY PERMIT

MODULE VII

ATTACHMENT 11

HWMU 169
POST-CLOSURE PLAN

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1.0 INTRODUCTION

The objectives of this Post-Closure Plan (PCP) are to ensure that Dugway Proving Ground (DPG or Dugway) complies with the Post-Closure Permit issued by the State of Utah in accordance with Title 40 Code of Federal Regulations (CFR) §265.117, with respect to post-closure inspection requirements and tracking and inspections to ensure industrial site use. In accordance with Title 40 Code of Federal Regulations (CFR) 270.28 and Utah Administrative Code (UAC) R315-3-2.19, the post-closure plan is required to include specific information for a closed facility. As applicable to Hazardous Waste Management (HWMU) 169 at Dugway Proving Ground (DPG or Dugway), the information requirements include:

- General description of the facility;
- Description of security procedures;
- Copy of general inspection schedule;
- Preparedness and Prevention Plan;
- Facility location information (including seismic and flood plain considerations);
- Closure Plan or Closure Proposal;
- Certificate of Closure;
- Topographic map, with specific scale;
- Summary of groundwater monitoring data; and
- Identification of uppermost aquifer and interconnected aquifers.

Table 1 provides the regulatory citations for the general information requirements and the specific locations in the Post-Closure Plan where the specific information is presented. Following the table, Sections 2.0 through 10.0 provide the required information in sufficient detail to implement the HWMU 169 Post-Closure Plan.

Table 1: Summary of HWMU 169 Post-Closure Information Requirements Under 40 CFR §270.14, UAC R315-3-2.19 and UAC R315-3-2.5

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(b)(1) UAC R315-3-2.5(b)(1)	General Description of the Facility	Section 2.0.
40 CFR §270.14(b)(4) UAC R315-3-2.5(b)(4)	Description of Security Procedures	Section 3.0.
40 CFR §270.14(b)(5) UAC R315-3-2.5(b)(5)	General Inspection Schedule	Section 7.2, Module VII Table VII-3, and Module VII Form A
40 CFR §270.14(b)(6) UAC R315-3-2.5(b)(6) and UAC R315-8-3	Preparedness and Prevention	Section 4.0.
40 CFR §§270.14(b)(11) (i-ii, v) UAC R315-3-2.5(b)(11) (i-ii, v)	Facility Location Information Applicable seismic standard	Section 5.0.
40 CFR §§270.14(b)(11) (iii-v) UAC R315-3-2.5(b)(11) (iii-v)	Facility Location Information 100-year floodplain	Section 6.0.
40 CFR §270.14(b)(13) UAC R315-3-2.5(b)(13)	Copy of the Closure Plan	Final Closure Report, submitted September 2004 for public comment.

Table 1: Summary of HWMU 169 Post-Closure Information Requirements Under 40 CFR §270.14, UAC R315-3-2.19 and UAC R315-3-2.5 (continued)

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(b)(14) UAC R315-3-2.5(b)(14)	Closure Certification and Notification	Section 9.0 and Appendix A.
40 CFR §270.14(b)(16) UAC R315-3-2.5(b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement.
40 CFR §270.14(b)(18) UAC R315-3-2.5(b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (i)	Topographic Map Map Scale and Date	Figure 2 (1 inch = 500 feet).
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (ii)	Topographic Map 100-year floodplain area	Section 6.0; HWMU 169 is not located within a verified 100-year floodplain area; Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (iii)	Topographic Map Surface waters including intermittent streams	Section 2.6 and Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (iv)	Topographic Map Surrounding land uses	Figure 2. There are no residential populations in the vicinity of HWMU 169. The closest residential area is English Village (approximately 21 miles away).
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (v)	Topographic Map A wind rose (i.e., prevailing windspeed and direction)	There are no residential populations in the vicinity of HWMU 169. The closest residential area is English Village (approximately 21 miles away). A wind rose is not deemed necessary for HWMU 169.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (vi)	Topographic Map Orientation of Map, North Arrow	Figure 2.
40 CFR §270.14(b)(19) UAC R315-3.2.5(b)(19) (vii)	Topographic Map Legal boundaries of the hazardous waste management facility.	Legal boundaries have not been established at DPG for former HWMUs.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (viii)	Topographic Map Access control, fence, gates	Section 3.0 and Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (ix)	Topographic Map Injection and withdrawal wells	Three water supply wells are located in the vicinity of HWMU 169; Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (xi)	Topographic Map Barriers for drainage or flood control	There are no flood control structures on or in the vicinity of HWMU 169; Figure 2.
40 CFR §270.14(c) UAC R315-3-2.5(c)(1)	Groundwater Monitoring Information Summary of Groundwater Data	Not applicable. No groundwater monitoring wells are present at HWMU 169.
40 CFR §270.14(c) UAC R315-3-2.5(c)(2)	Groundwater Monitoring Information Identification of uppermost aquifer	Not applicable. No groundwater monitoring wells are present at HWMU 169.

Table 1: Summary of HWMU 169 Post-Closure Information Requirements Under 40 CFR §270.14, UAC R315-3-2.19 and UAC R315-3-2.5 (continued)

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(c) UAC R315-3-2.5(c)(3)	Groundwater Monitoring Information Delineation of the Waste Management Area	Not applicable. No groundwater monitoring wells are present at HWMU 169.
40 CFR §270.14(c) UAC R315-3-2.5(c)(4)	Groundwater Monitoring Information Extent of Plume	Not applicable. No groundwater monitoring wells are present at HWMU 169.
40 CFR §270.14(c) UAC R315-3-2.5(c)(5)	Groundwater Monitoring Information Detailed Plans/ Engineering Report for Proposed Groundwater Program	Not applicable. No groundwater monitoring wells are present at HWMU 169.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(i)	Groundwater Monitoring Information Proposed List of Parameters	Not applicable. No groundwater monitoring wells are present at HWMU 169.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(ii)	Groundwater Monitoring Information Proposed Groundwater Monitoring System	Not applicable. No groundwater monitoring wells are present at HWMU 169.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(iii)	Groundwater Monitoring Information Background Values	Not applicable. No groundwater monitoring wells are present at HWMU 169.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(iv)	Groundwater Monitoring Information A description of the Proposed Sampling	Not applicable. No groundwater monitoring wells are present at HWMU 169.

2.0 FACILITY DESCRIPTION

The following provides a general description of HWMU 169, also known as the Baker Wash Rack at DPG, as required by UAC R315-3-2.5(b)(1).

2.1 HWMU 169 LOCATION AND HISTORY

The HWMU 169 site is located in the Baker Area approximately 21 miles west of English Village (Figure 1). The following site background summary for HWMU 169 is condensed from the Closure Plan Module 3 (FWEC, 1996).

HWMU 169, the Baker Wash Rack, is located 300 feet (ft) north of Burns Road on the east side of the Baker Area (Figure 2). The Baker Area is a developed area that consists of buildings and structures on an elevated asphalt-covered pad that is connected to outlying structures and other portions of DPG by elevated roads (Figure 3). HWMU 169 is located near the following HWMUs and SWMUs at the Baker Area:

- Former Baker Boiler House Sump (HWMU 34) approximately 170 ft south-southwest;
- Baker Sewage Lagoon (HWMU 33) approximately 1,500 ft northeast;

- Old Sewage Drainfield (Part of Corrective Action Solid Waste Management Unit (SWMU) 35) approximately 1,600 ft north;
- Baker Landfill (Corrective Action SWMU 92) approximately 300 ft north;
- Building 2006 (Corrective Action SWMU 171) approximately 400 ft northwest;
- Baker Laboratory Incinerators (Corrective Action SWMUs 122 and 123) approximately 750 ft west;
- Abandoned Sewage Treatment Plant (Part of Corrective Action SWMU 35) approximately 650 ft northwest; and
- Abandoned Baker Pathological Waste Incinerator (SWMU 24) approximately 50 feet northwest.

2.2 PAST OPERATIONS

The wash rack was used approximately once per year to clean and maintain vehicles. According to former DPG employees the wash rack was designed for washing vehicles contaminated with chemical agent. It has also been stated that the wash rack was used for final cleaning of vehicles involved in field tests. These vehicles received field decontamination at either the SWMU 13 Vehicle Decontamination Pad or the decontamination pad at the intersection near the Downwind Grid prior to being washed at HWMU 169 (FWEC, 1996).

The Baker Wash Rack consists of two concrete pads, a concrete-lined ditch, and an unlined evaporation pond (Figure 4). The system was designed so that rinse water and other liquid wastes would drain from the pads into the concrete lined ditch and discharge into the unlined evaporation pond. The first concrete pad was used to wash the underside of vehicles using high-pressure water. The water drained into a sump beneath the pad and then into the lined ditch. The larger pad was used as a vehicle hoist and grease rack, containing two adjacent vehicle hoists that rose from two covered compartments. The hoists were operated by separate hydraulic systems. Any liquid that fell into the hoist compartments drained into a vitrified clay pipe and then to the concrete lined ditch. The pads encompass an area of approximately 90 ft by 40 ft. The lined ditch is approximately 300 ft long and 2.5 ft deep. The unlined evaporation pond is surrounded by a three-ft high earthen berm.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

The detailed results of previous material, soil, and groundwater sampling, and closure information including the risk assessment are available for HWMU 169 in the DSHW public documents listed below in Table 2 (UAC R315-3-2.5(b)(13)).

Table 2: DSHW Library Documents Detailing HWMU 169 Investigations

Document Title	Received Date	DSHW Library No.
Foster Wheeler Environmental Corporation (FWEC), 1996. *Dugway Proving Ground, Draft Closure Plan Module 3, HWMU 169*. September.	9/27/1996	DPG00029
Shaw Environmental, Inc. (Shaw), 2004. *Final Closure Report, Hazardous Waste Management Unit 169, Baker Wash Rack, Dugway Proving Ground.* May.	7/04	DPG00429

2.4 CLOSURE ACTIVITIES

Dugway has completed closure actions for HWMU 169, and the site meets the risk-based closure criteria for future industrial use, as specified in UAC R315-101. Activities performed at HWMU 169 are described in detail in the Final Closure Report (Shaw, 2004). These activities included soil and groundwater sampling. Data were collected from 18 soil borings, three surface samples, and three direct push groundwater samples. Little, if any, waste was generated during the operation of HWMU 169. Based on samples collected from the concrete pads, drains and sumps, concrete-lined ditch, and evaporation pond, no waste is present at HWMU 169. The sample results were evaluated in human health and ecological risk assessments as discussed below.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

Human health and ecological risk assessments were conducted and indicated that the remaining residual contamination does not pose an unacceptable risk for future workers as defined in UAC R315-101. The cancer risk is less than 1E-04 and the Hazard Index is less than one based on future industrial use of the property. Ecological risks are expected to be minimal. The human health and ecological risk assessments are presented in the Final Closure Report (Shaw, 2004). Residual contamination in the soil is not a source of groundwater contamination.

Since no waste is present, there is not any potential for escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, surface waters, or to the atmosphere.

2.6 SURFACE WATER AND GROUNDWATER

Based on the topography of the area, the natural drainage of surface water is to the north-northwest. The Baker Area and HWMU 169 appear to be in the central portion of a natural drainage visible on aerial photographs.

.The shallow water-bearing zone is nonpotable, with total dissolved solids (TDS) concentrations measured at 47,000 milligrams per liter (mg/L). According to UAC R317-6-2, this TDS concentration corresponds to Class IV groundwater (i.e., saline greater than 10,000 mg/L TDS).

Groundwater monitoring is not required at this site.

2.7 CLOSURE NOTIFICATIONS

The Certification of Closure (Appendix A) was received and verified by the Executive Secretary of the Utah Solid and Hazardous Waste Control Board on November 5, 2004.

Federal facilities are exempt from submitting notifications to the local zoning authority as required by 40 CFR §§264.116 and 264.119, which are incorporated by reference in UAC R315-8-7.

3.0 SECURITY REQUIREMENTS

HWMU 169 is located within a federal, military installation (Dugway Proving Ground). As such, access to the installation is restricted for the common population. Dugway's Base Security (Range Control) shall monitor access to HWMU 169.

4.0 PREPAREDNESS AND PREVENTION MEASURES

Dugway Proving Ground requests a waiver for the requirements specified under UAC 315-8-3. All wastes have been removed from HWMU 169. The Dugway Emergency Response and Contingency Plan of this Permit, where applicable to this site, shall be used to announce and respond to emergency conditions. At a minimum the site inspector should have a radio or phone and a First Aid kit available during inspections.

5.0 SEISMIC STANDARD

HWMU 169 is not located within 200 feet of any active faults. Although Utah is tectonically active, most of the earthquake activity occurs about 55 miles to the east along the Wasatch Range Foothills.

A geologic map completed in a United States Geological Survey (USGS) study (Barnhard and Dodge, 1988), was used to determine the distribution, relative age, and amount and extent of surface rupture on Quaternary fault scarps in the area of HWMU 169.

The USGS study (Barnhard and Dodge, 1988) concluded that morphologic and geologic data collected along the fault scarps in the area indicate that all were formed during the later Pleistocene era and there is not any clear evidence of Holocene surface rupture. Several faults inferred on geophysical evidence are located at Dugway; however, there is no evidence of displacement during Holocene time.

6.0 FLOODPLAIN STANDARD

HWMU 169 is not located within a 100-year verified floodplain. The National Flood Insurance Rate Map, identifying the boundary of the 100-year flood, does not include Dugway. These are no permanent streams or other surface water bodies on Dugway.

Surface water from precipitation flows onto the flat plain and evaporates. Like other arid regions, Dugway is subject to flash flooding following high-precipitation events. Flash floods have occurred only four times in the history of the installation, in 1944, 1952, 1973, and 1983. The major area affected during flash floods has been the Government Creek drainage channel, which has overflowed and caused minor inundation of roads at the Ditto Technical Center (located approximately six miles east of the Baker Area).

7.0 POST-CLOSURE INSPECTIONS

7.1 INTRODUCTION

HWMU 169 has been closed under a continued industrial use scenario, which prohibits residential use in the areas formerly occupied by the site. To ensure that the area is not reused or developed for residential purposes, annual general site inspections and a biennial report shall be required.

7.2 ANNUAL INSPECTIONS

General site inspections of the former HWMU 169 site shall be conducted annually before November 1st, to ensure that the former site remains under industrial use and to verify the Dugway Dig Permit process as described in Module VII.I has been followed. The general post-closure site inspection checklist for

industrial use sites should be used and is included in Module VII as Form A. Completed inspection forms shall be filed with the Dugway Environmental Office. The site shall be visually inspected to ensure the following conditions are maintained at the site:

1. There is no evidence of land use other than for industrial purposes within the former site boundary; and
2. There is no evidence of soil disturbance.

Table 3 summarizes the Post-Closure Inspection Schedule for HWMU 169, and lists the items to be inspected and potential problems. Inspection personnel shall note any problems found and shall inform appropriate Dugway representatives.

Table 3: HWMU 169 Post-Closure Inspection and Monitoring Schedule

Inspection/Monitoring Item	Method of Documentation	Frequency of Inspection
Land Use	General Post-Closure Site Inspection Checklist (Module VII Form A)	Annual inspections shall be conducted no later than November 1st
Soil Disturbance	General Post-Closure Site Inspection Checklist (Module VII Form A)	Annual inspections shall be conducted no later than November 1st

7.3 INSPECTION FOLLOW-UP

Copies of completed site inspection checklists (Module VII Form A) shall be forwarded to the Dugway Environmental Office. The Point-of-Contact for the Dugway Environmental Office is as follows:

Environmental Programs Compliance Representative
Dugway Proving Ground Environmental Program Office
Dugway Proving Ground, UT 84022
Telephone: (435) 831-3560

The Dugway Environmental Office shall notify the appropriate personnel to implement corrective action as needed.

Corrective action shall be initiated as soon as practical after identifying the problem. If the corrective action requires substantial effort, a technical plan shall be prepared to summarize the problem, the potential impacts, the proposed plan for action, and the time-frame in which corrective action shall be implemented as required under this Permit. This plan shall be approved by the Executive Secretary and shall be submitted within 30 days of Dugway's decision to implement corrective action.

8.0 SUBMITTALS/REPORTING

Based on the evaluation presented in Final Closure Report for HWMU 169 (Shaw, 2004), no post-closure monitoring, including groundwater monitoring is required for HWMU 169.

8.1 NON-COMPLIANCE REPORTING

The conditions at HWMU 169 are such that the impact to human health and the environment is very unlikely. Hazardous wastes are no longer managed or maintained at the site. Nonetheless, if there is any type of non-compliance with any condition of this Permit, notifications shall be submitted per Permit Condition VII.C.5.

8.2 BIENNIAL POST-CLOSURE REPORT

In accordance with UAC R315-3-3.1(l)(9), a Biennial Post-Closure Report shall be prepared for all Dugway closed HWMUs and SWMUs undergoing post-closure care. Post Closure Reports shall be submitted to DSHW no later then March 1st, of the following year that the report is due. The first Post-Closure reporting year is 2007 for HWMU 169. This report shall be submitted no later than March 1st of 2008. Specifically for HWMU 169, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions; and
- Inspection records.

8.3 REQUIRED SUBMITTALS

Table 4 summarizes the requirements for the Biennial Post-Closure Report for HWMU 169 and reporting for any non-compliance.

Table 4: Summary Table of Required Submittals

Required Submittals	Frequency and Submittal Date
Biennial Post-Closure Report	Post-Closure Reports shall be submitted to the Division of Solid and Hazardous Waste no later than March 1st of the year the report is due. Reporting years are odd-numbered years beginning with 2007, for the duration of the Post-Closure Monitoring Period.
Non-Compliance Reporting 1. Anticipated Non-Conformance (VII.C.5.); 2. 24-hour Notification for information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment (VII.C.5.); 3. Five-day written notification for information concerning the non-compliance, which may endanger	1. 30 days advance notice of any change which may result in non-compliance; 2. Orally within 24 hours of discovery; 3. Within 5 days of discovery; and

public drinking water supplies or human health or the environment. The Executive Secretary may waive the 5-day notice, in favor of a 15-day notice; and (VII.C.5.); 4. Written notification for information concerning the non-compliance, which does not endanger human health or the environment (VII.C.5.).	4. Submitted with the Biennial Post-Closure Report.

9.0 POST-CLOSURE CERTIFICATION

No later than 60 days after post-closure activities are completed and approved by the Executive Secretary, Dugway shall submit a certification to the Board, signed by Dugway and an independent professional engineer registered in the State of Utah, stating why post-closure care is no longer needed.

10.0 REFERENCES

Barnhard, T.P. and R.L. Dodge, 1988. *Map of Fault Scarps Formed on Unconsolidated Sediments, Tooele 1^o x 2^o quadrangle, Northwestern Utah*, United States Geological Survey.

Ebasco, 1993. *Closure Plans for SWMUs, Nature and Extent Investigation No. 12-SWMUs 164, 165, 166, 167, 168, and 169, Dugway Proving Ground*. July.

Foster Wheeler Environmental Corporation (FWEC), 1996. *Dugway Proving Ground, Draft Closure Plan Module 3, HWMU 169*. September.

Parsons Environmental Science, 2004. *Hydrogeological Assessment and Regional Groundwater Management Plan, Volume I: Ditto Groundwater Management Area*. Final. October.

Shaw Environmental, Inc. (Shaw) 2004. *Final Closure Report, for HWMU 169, Baker Wash Rack, Dugway Proving Ground, Utah*. May.

U.S. Army Corps of Engineers (USACE), 1999. *Dugway Proving Ground Closure Module 3, Hazardous Waste Management Unit 169*. Final.

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APPENDIX A

HWMU 169

CERTIFICATION OF CLOSURE

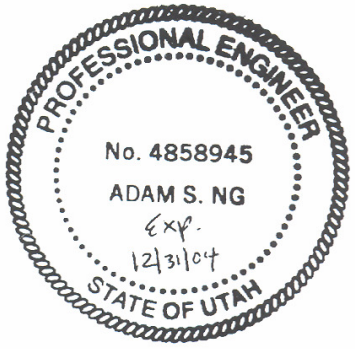
CERTIFICATION OF CLOSURE

The Closure Report for Hazardous Waste Management Unit (HWMU) 169 at Dugway Proving Ground, Utah has been prepared by Shaw Environmental in accordance with the closure requirements specified under the Utah Administrative Code (UAC) 315-7-14 and 40 Code of Federal Regulations 265, Subpart G. The requirements of UAC 315-101 form the basis for the risk-based criteria in the closure of HWMU 169.

In accordance with 40 CFR 265.115, the signature and seal certify that a licensed professional has reviewed the Closure Report in accordance with the above referenced regulatory requirements.

Respectfully submitted,

Scott Reed
Directorate of Environmental Programs
Dugway Proving Ground



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FIGURES